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THE UNITED STATES DEPARTMENT OF AGRICULTURE*

THE absence of a Department of Agriculture from the complicated scheme of British Government offices leads us to inquire whether it is possible for such a Department in the United States to publish annually eleven or twelve hundred pages of matter useful to the agricultural community, and whether those publications have any considerable circulation in the country.

The question of circulation is abundantly answered by a resolution of the House of Representatives passed on July 14, 1870 (the Senate concurring), which enacted, "That there be printed of the Annual Report of the Commissioner of Agriculture for 1869 *two hundred and twenty-five thousand extra copies*, one hundred and eighty thousand of which shall be for the use of the House, twenty thousand for the use of the Senate, and twenty-five thousand for distribution by the Commissioner of Agriculture." These figures are so startling in their magnitude that they seem to prove too much, until we recollect that the United States of America extend over an area proportionately enormous, including every gradation of climate, from the sub-tropical to the sub-arctic, and every variety of culture, from the cotton and rice of the south to the corn and roots of the north.

That these publications contain matter useful to the agricultural community will be readily admitted after even a cursory examination of either of the volumes; and a careful study of the official reports will lead many people to ask why we in England are not similarly favoured. The United States' Department of Agriculture fulfils two functions. It is primarily a Department of Administration, but it is also charged to acquire information concerning agriculture by means of books and correspondence, by practical and scientific experiments, by the collection of statistics, and by any other appropriate means. The papers in its annual volume include well-considered reports by all the chief officers of the Department, including, besides the Commissioner himself, the statistician, the chemist, the entomologist, the superintendent of the garden and grounds, the botanist, the editor, and others. The papers beyond these official documents consist, for instance, of Reports on Agricultural Education in Europe, on the Beet-Sugar Industry in Europe, on the Agricultural Resources of Alaska, on Agricultural Meteorology, &c. There are also papers on special subjects, many of them of the highest scientific value, such as are published in the journals of agricultural and other societies, and which may be regarded as supplementary to the strictly official work of the Department.

With such a sketch of the United States Department of Agriculture before us, it seems worth while, even in the pages of a scientific journal, to compare it with our English institutions. We have no representative of it as a department of administration; but we have a series of unconnected departments and commissions, which are as fancifully associated and divided as the stars of heaven in the time-honoured system of constellations. The Privy Council, for instance, takes cognizance of science and art, the education of children, and the diseases of animals. But why it should be the duty of the same high official to protect our flocks and herds from scab, cattle-plague, and other contagious diseases, and at the same time to educate our children, we cannot understand. Is the Vice-President of the Privy Council an *ex officio* Admirable Crichton, or is there some mysterious connection between the three R's and pleuro-pneumonia? Another of our agricultural anachronisms is the Copyhold, Tithe, and Enclosure Commission, which is the State authority on drainage and cottages, as well as the national land surveyor, valuer, and actuary. The Statistical Department of the Board of Trade is entitled to great praise for the manner in which it performs its varied work, including, besides a statistical report on the imports and exports of the United Kingdom, a fair statement of the agricultural condition of the country from year to year. Leaving out of the question the new Local Government Board, the Local Government Act Department, the Poor Law Board, and other departments which are more or less connected with the agricultural interest at home, we come to the Board of Customs, on which agriculturists are dependent for the enumeration of our agricultural imports and exports, while the nation looks to it for the collection of the revenue on our claret and cigars.

Neither as a means of disseminating information have we any representative of the United States Department of Agriculture, with its Annual Report, printed at the expense of the State in editions of nearly a quarter of a million. It is true that the Royal Agricultural Society of England, with less than 6,000 members, does more, probably, in its special walk than any other private society in the world; but it is still nothing more than a private society, and it cannot possibly, therefore, cover the whole ground required by the progressive agriculture of the present day. Indeed, it is, by its charter, expressly prohibited from interfering in matters which are questions of either law or politics. Its efforts are therefore confined to "practice" and "science," and it supports a large staff of scientific officers, including a chemist, botanist, veterinary inspector, engineer, and others, absolutely without State aid; it also expends at least 2,000*l.* per annum in testing machinery; gives away 3,000*l.* per annum in prizes for the best animals; promotes experimental investigations; and incurs very serious risk in exposing adulterations of manures and feeding stuffs.

It may, doubtless, be urged that if English farmers can do so much for themselves they require no help. But practically our Government has found out that there are things to be done which only a Government can do. Thus, after the nation had suffered fearful losses by the ravages of cattle-plague, it ordered an investigation of the subject, and—published a blue-book. After the condition of the agricultural labourer, and especially of women and children employed in agriculture, had been stigmatised as a blot on our civilisation, it issued a Royal Commission, and the result of this excessive effort for the advancement of agriculture was—a series of blue

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* Report of the Commissioner of Agriculture for the year 1868, 8vo, pp. 671, Washington, 1869. Ditto for 1869, 8vo, pp. 702, Washington, 1870. Monthly Reports of the Department of Agriculture for the year 1868, 8vo, pp. 483, Washington, 1868. Ditto for 1869, 8vo, pp. 419, Washington, 1869. Ditto for 1870, 8vo, pp. 498, Washington, 1871.

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books. But who reads blue-books? Farmers cannot perform successfully a feat which almost baffles the best-trained member of Parliament. What they want is a Department of Agriculture which shall improve the laws of the land, as well as investigate obscure subjects, and circulate the official reports in the manner of the United States department, in editions of a quarter of a million. The United States Commissioner not only expounds the laws of the federation on roads, fences, &c.; but he learns, for instance, that the beet sugar industry of Europe, and the system of agricultural education in Germany and other countries, present instructive features to the intelligent agriculturist, and he therefore sends a qualified commissioner to report on each of these subjects. American farmers are thus enlightened on European agriculture sooner and more authoritatively than we, who are separated from the Continent by nothing more than a "streak of silver sea." There are our Colonies also; and we would on their behalf inquire whether an intending emigrant to Canada, New Zealand, Australia, or the Cape, can obtain as much reliable information on their agriculture as the American farmer now possesses about his country's recent purchase, Alaska? It thus seems clear that the United States Department of Agriculture presents features which may be profitably copied by our Executive Government, and others which are equally instructive both to our agriculturists and to our men of science.

AGASSIZ'S SEASIDE STUDIES

Seaside Studies in Natural History. By Elizabeth and Alexander Agassiz. Marine Animals of Massachusetts Bay: Radiates. 2nd ed. (London: Trübner & Co., 1871.)

THIS is a reprint, with a few additions, of the charming work which became so popular in America and in England some five years since on account of its intrinsic merits and the beauty of the illustrations. The book includes descriptions and more or less truthful illustrations of the Actiniæ, Madreporaria, Alcyoninæ, Acalephæ, Hydroids, Holothurians, Echinoidea, and Asteroidea which may be found in the neighbourhood of Massachusetts Bay. The history of the development of many of the forms is carefully written, and is obviously the result of patient original observation.

In noticing the reproduction of the Actiniæ the authors remark that the eggs which hang on to the inner edge of the partitions of the visceral cavity drop off into it during different stages of development. Ordinarily they are passed out through the mouth as Planula-shaped ciliated creatures, which soon become attached to a foreign substance. The base enlarges, and the free extremity falls in to form a concavity, the future gastric and visceral cavity. But sometimes the embryo is provided with tentacles and with its stomachal cavity before it escapes. Lacaze-Duthiers has described a similar state of things in the reproduction of *Corallium rubrum*, and probably the embryonic condition of all the stony corals is that of a free swimming sac which undergoes metamorphosis. These usually sedentary Actiniæ are not without nomadic species, and *Arachnactis brachiola* A. Ag. is described as a small floating anemone, very nocturnal in its habits, which swims with its tentacles and mouth downwards, using the body as a float. This form is not quite symmetrical, and has an evident tendency towards establishing a longitudinal axis. The mouth is out of the centre. Bicidium is noticed as selecting the mouth-folds of the common large red Cyanea as its home. It undergoes retrograde development, and its tentacles are short and stout on account of its parasitic existence.

The only stony coral described is the littoral Astrangia, which is probably a descendant of the miocene forms which once flourished on the same area. The tentacles of this coral are covered with wart-shaped masses, crowded with nematocyst lasso cells. Such forms as Caryophyllia and Balanophyllia, which are so well represented on our coasts and in thirty fathom water, do not appear to have been found by the authors in Massachusetts Bay. Amongst the Acalephæ, Cyanea, of course, is well described, and it is observed that so large a portion of its bulk consists of water that one of no less than thirty-four pounds weight being left to dry in the sun for some days, was found to have lost 99 per cent. of its original weight. Writing of the not very attractive appearance of these huge jelly fish, Agassiz observes that "to form an idea of his true appearance, one must meet him as he swims along at midday, rather lazily withal, his huge semi-transparent disc with its flexible lobed margin glittering in the sun and his tentacles floating to a distance of many yards behind him. Encountering one of these huge jelly fishes when out in a rowing boat, we attempted to make a rough measurement of his dimensions upon the spot. He was lying quietly near the surface, and did not seem in the least disturbed by the proceeding, but allowed the oar, eight feet in length, to be laid across the disc, which proved to be seven feet in diameter. Backing the boat slowly along the line of the tentacles, which were floating at their utmost extension behind him, we measured these in the same manner, and found them to be rather more than fourteen times the length of the oar, thus covering a space of some hundred and twelve feet." This huge mass is produced by a hydroid measuring not more than half an inch in length when full grown.

The parasitic early life of *Campanella pachyderma* A. Ag. appears to throw a doubt whether this acaleph passes through the hydroid state or not. Should the eggs develop at once into the medusa in this instance, there is no small significance to be attached to the fact. An anomaly of an opposite character is noticed in the case of *Laomeda amphora* Ag. This campanularian develops medusæ which never separate from the parent hydroid, but wither on its stem after having laid their eggs. The development of these abortive medusæ is not far advanced. This species flourishes in the sewage of Boston. There is a very admirable drawing of *Tubularia Couthouyi* Ag., a tubularian whose medusæ buds are never freed from the stem, and do not develop into full-grown jelly fish, but always remain abortive. These buds cluster like a bunch of grapes under the expanded umbrella-shaped tentacles of the hydroid, which are gracefully supported by a curved stem.

The process of the budding of the medusæ of Hybocodon, where small jelly fish similar to the original grow by gemmation from a large tentacle, is well described, and the hydroid stage and general want of symmetry in the

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